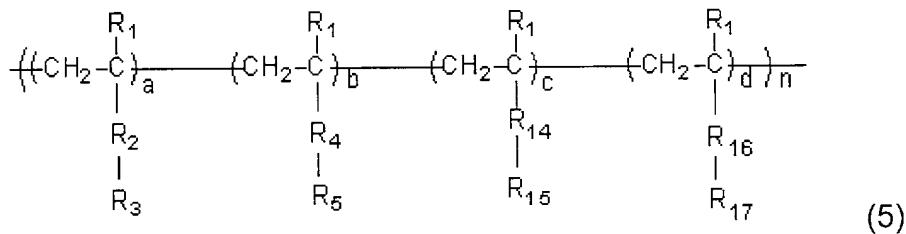


ABSTRACT OF THE DISCLOSURE

A polymer for a chemically amplified negative photoresist and a photoresist composition are provided. A representative polymer of the invention is a compound of formula 5:

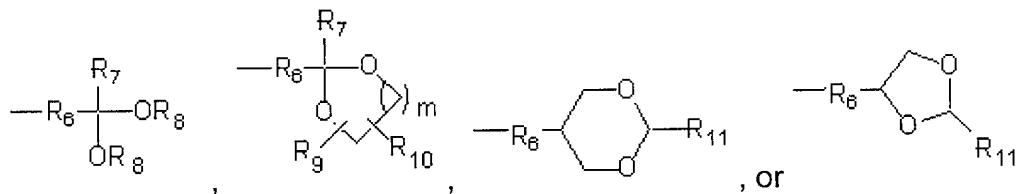


wherein:

R₁ is H or CH₃;

R₂ and R₄ are each independently (R)_α(CH₂)_βR' or (R)_α[(CH₂)_γO]_δR' (wherein, R is CO, CO₂, O, OCO, or OCO₂, R' is O, CO₂, or OCO₂, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5);

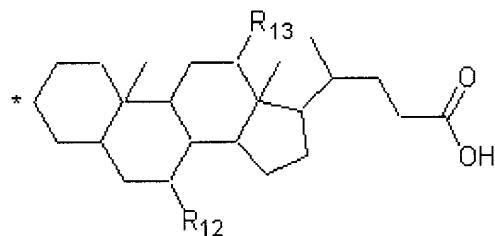
R₃ is represented by one of the formula:



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wherein R₆, which combines an acetal compound and a vinyl compound, is a C₁-C₅ saturated alkyl, a C₁-C₅ ether, or a C₁-C₅ carbonyl; R₇ to R₁₁ are each independently selected from H, C₁-C₅ saturated alkyls, C₁-C₅ ethers, C₁-C₅ carbonyl groups, and C₁-C₅ alcohol groups; and m is a number ranging from 1-5; and

R₅ is represented by formula:



wherein R₁₂ and R₁₃ are each independently H or OH; and

* represents the bonding site at which the R₄ group is bonded.

R₁₄ and R₁₆ are each independently selected from a single bond (R)_α(CH₂)_βR'

5 and (R)_α[(CH₂)_γ O]_δR' (wherein, R is CO, CO₂, O, OCO, or OCO₂, R' is O, CO₂, or
OCO₂, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5); R₁₅ is a hydroxyl group; R₁₇ is
a carboxyl group;

10 a, b, c, and d represent the mole ratios of each monomer, wherein a has a value of 0-0.5, b has a value of 0-0.9, c has a value of 0-0.3, and d has a value of 0-0.3, provided that a+b+c+d = 1; and

n represents the degree of polymerization of each polymer, and has a value of at least 2.